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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,157	12/05/2001	Eugene Murphy O'Donnell	PU010276	4236

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EXAMINER

GUHARAY, KARABI

ART UNIT PAPER NUMBER

2879

DATE MAILED: 04/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/007,157

Applicant(s)

O'DONNELL ET AL.

Examiner

Karabi Guharay

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>Paper # 4 & 5</u> . | 6) <input type="checkbox"/> Other: ____. |

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "an array of resonant microcavity anodes" as claimed in claim 6 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claim 6 recites the limitation of "an array of resonant microcavity anodes on a second side of the vacuum". However, specification does not disclose an array of resonant microcavity anodes. Both Fig 1 and specification disclose a single anode on a second side of the vacuum cavity.

Claim Objections

Claims 2 and 7 are objected to because of the following informalities: "an" before LCOS device should be changed to "a" for proper grammatical form. Appropriate corrections are required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Jacobsen et al. (US 5804919).

Regarding claim 6, Jacobsen discloses an illumination source (Fig 15) for a projection system (lines 60-62 of column 20) comprising a vacuum cavity (242), an array of field emission display points (244) on a first side of the vacuum cavity, and resonant cavity anode (239) on a second side of the vacuum cavity for generating light of the selected color, wherein the field emission display points are electron emitters used to excite resonant microcavity anodes (239) to exclusively generate light of selected color (lines 7-16 of column 17, lines 32-35 of column 15).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, & 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurematsu et al. (US 5580142), in view of Jacobsen et al. (US 5804919).

Regarding claims 1 & 3, Kurematsu et al. disclose a projection type display unit (Fig 7, lines 10-12 of column 1) comprising an imager defining a plurality of controllable pixels (liquid crystal light valves 1, 2, 3, see lines 36-38 of column 5, & Fig 10) a light source (31, 33, and 35 of Fig 7) for exclusively generating light of a selected color (lines 40-43 of column 5), the light source arranged for transmitting light through the imager (liquid crystal light valve 1, 2, 3) to produce image (lines 45-49 of column 5) and a projection lens (6) for magnifying and focusing the image for projection on a screen (see Fig 8, lines 56-60 of column 6).

But Kurematsu et al. fail to disclose that the light source is comprised of a field emission device exciting a resonant micro-cavity anode with an active region having a phosphor disposed therein for emitting light of the selected color.

However, Jacobsen et al. discloses a light source (RMD of Fig 15, lines 48-49 of column 20) comprising a field emission device (244) exciting a resonant micro-cavity anode (240) with an active region (active layer 236) having a phosphor (lines 10-12 of column 6) disposed therein for emitting selected color light (lines 7-16 of column 17). Jacobsen further teaches the use of such light sources for the projection device to produce three different color light sources, instead of using arc lamp producing white light and using filters to produce separate color light (lines 57-62 of column 20), since RMD light source produces high brightness and highly directional light source (lines 6-9 of column 21).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the arc lamp with filter as the light source for the

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projection device of Kurematsu et al., by resonant micro-cavity field emission device as disclosed by Jacobsen et al. since this type of light source eliminates use of filter to produce different color light as well as produce high brightness high directional light.

Regarding claim 4, Jacobsen et al. disclose that the field emission devices (resonant microcavity devices of Fig 13a) produces red, green and blue light (lines 32-35 of column 15). The same reason for combining art as in claim 1 applies.

Regarding claim 5, Kurematsu et al. disclose an optical combiner (a prism with dichroic films 14 and 15 of Fig 7), the optical combiner merging each of the color images to form a single image (see Fig 7).

Claims 2, and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurematsu et al. and Jacobsen et al. as applied to claim 1 above, and further in view of Stahl et al. (US 6661475).

Regarding claim 2, combined structure of Kurematsu and Jacobsen meet all the limitations of claim 2 except for the imager being LCOS device. Instead, Kurematsu discloses liquid crystal light valve as an imager.

However, Standl et al. teaches that projection display system can either use transmissive light valve or reflective type such as LCOS light valve depending on the cost, brightness and image quality goal, and further teaches that multimedia projection characteristics are achieved by using LCOS light valve.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use LCOS light valve in order to achieve multimedia projection characteristics.

Regarding claim 9, combined structure of Kurematsu and Jacobsen and Stahl discloses a method of displaying an image by exciting resonant microcavity for emitting color light, then projecting the light through the LCOS imager to produce an image and magnifying and focusing through the projection lens.

Regarding claim 10, Kurematsu discloses optically combining image of one selected color with the image of a second selected color distinct from the first color (see Fig 6).

Regarding claim 11, Kurematsu discloses that the colors are selected from the group consisting of red, green, and blue (lines 35-44 of column 5).

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaconsen et al. as applied to claim 6 above, and further in view of Stahl et al. (US 6661475).

Regarding claim 7-8, Jacobsen discloses all the limitations of claims 7-8, except for a LCOS device and a projector lens.

However, Stahl et al. disclose a projector system (Fig 1) for color image projection having LCOS light valve (26) and a projection les (27) using an arc lamp light source. Jacobsen discloses the advantage of using RMA devices as a light source for the projection device, instead of using arc lamp producing white light and then using filters to produce separate color light (lines 57-62 of column 20), since RMA light source produces high brightness level, moreover light is highly directional (lines 6-9 of column 21).

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Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the arc lamp with filter as the light source for the projection device of Stahl et al., by resonant micro-cavity field emission device as disclosed by Jacobsen et al. since this type of light source eliminates use of filter to produce different color light as well as produce high brightness high directional light.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karabi Guharay whose telephone number is (571) 272-2452. The examiner can normally be reached on Monday-Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Karabi Guharay
Karabi Guharay
Patent Examiner
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